

Application No.: 10/800,230

Docket No.: TOW-067RCE

REMARKS

In this Response, Applicants amend claims 1 and 4. Claims 1, 3, 4, 6 and 7 are currently pending, of which claims 1 and 4 are independent. No new matter has been added. Support for the claim amendments can be found at least in Applicants' Figure 2 and related text. Applicants respectfully submit that the pending claims define over the art of record.

I. Rejection of Claims 1, 3, 4 and 6 under 35 U.S.C. § 103

Claims 1, 3, 4 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over United States Patent Publication Number 2003/0046867 to Woods (hereafter "Woods") in view of United States Patent Publication Number 2004/0146821 to Joshi (hereafter "Joshi").

Applicants respectfully submit that the Woods and Joshi references, alone or in any combination, fail to teach or suggest at least the following features of amended independent claims 1 and 4: "said reforming mechanism including an evaporator for changing water into steam before said steam mixes with said hydrogen-containing fuel or an oxygen supply."

Applicants respectfully submit that the Woods reference does not teach or suggest "said reforming mechanism including an evaporator for changing water into steam before said steam mixes with... an oxygen supply," as recited in claims 1 and 4. The Woods reference discusses that an oxygen supply 20 and a water supply 17 are mixed in the mixing device 85 to produce a mixture 19 of liquid water and oxygen. The mixture 19 is then heated by a heating means 66 to evaporate the liquid water in the mixture 19. See Woods, Figure 2 and paragraph 20. The Woods reference discusses that the water is mixed with the oxygen supply before the water-oxygen mixture is evaporated. Thus, the Woods reference teaches away from "said reforming mechanism including an evaporator for changing water into steam before said steam mixes with... an oxygen supply," as recited in claims 1 and 4.

Applicants respectfully submit that the Woods reference also does not teach or suggest "said reforming mechanism including an evaporator for changing water into steam before said steam mixes with said hydrogen-containing fuel," as recited in claims 1 and 4. The Woods reference discusses that a mixing device 95 intimately contacts fuel 11 with water 17 to produce a water saturated fuel gas stream 93. The heat-transfer passage 97 evaporates the water-

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saturated fuel gas mixture 93 into humidified fuel gas stream 94. See Woods, Figure 2 and paragraph 39. The Woods reference discusses that the water is mixed with fuel before the water-fuel mixture is evaporated. Thus, the Woods reference teaches away from "changing water into steam before said steam mixes with said hydrogen-containing fuel," as required by claims 1 and 4.

In the claimed invention, the water is supplied first to the reforming mechanism and then to the cooling mechanism. The water is vaporized before it is mixed with the fuel or the oxygen supply. As a result, the mixed gas can be reformed immediately, and the reformed gas can be produced more quickly. In contrast to the claimed invention, the water in the Woods reference is not vaporized until the water stream mixes with the fuel or the oxygen supply. As such, the humidification system of the Woods reference does not allow the system to start up quickly.

In view of the foregoing arguments, Applicants respectfully submit that the Woods reference does not teach or suggest each and every feature of claims 1 and 4. The addition of the Joshi reference fails to cure this deficiency.

The Joshi reference relates to a slotted injection nozzle which may be used to inject secondary fuel in a burner system (Joshi, abstract). The Joshi reference discusses recycling combustible waste gas from a PSA system to a reformer as additional or secondary fuel (Joshi, paragraph 4). A surge tank is used to even out cyclic pressure fluctuations in the waste gas output from the PSA (Joshi, paragraph 4). Applicants respectfully submit that the Joshi reference also does not teach or suggest "said reforming mechanism including an evaporator for changing water into steam before said steam mixes with said hydrogen-containing fuel or an oxygen supply," as recited in claims 1 and 4.

In view of the foregoing arguments, Applicants respectfully submit that the Woods and Joshi references, alone or in any combination, fail to teach or suggest each and every feature of independent claims 1 and 4. Furthermore, the Woods and Joshi references do not provide any motivation that would have led one of ordinary skill in the art to modify their teachings to arrive at Applicants' invention.

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As such, Applicants respectfully submit that independent claims 1 and 4 define over the art of record. Accordingly, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of claims 1 and 4.

Claim 3 depends upon independent claim 1, and adds separate and patentable limitations to claim 1. Claim 6 depends upon independent claim 4, and adds separate and patentable limitations to claim 4. As such, for this and the reasons set forth above, Applicants respectfully submit that dependent claims 3 and 6 also define over the art of record.

II. Rejection of Claim 7 under 35 U.S.C. § 103

Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over the Woods and Joshi references as applied to claim 4, and further in view of United States Patent Publication Number 2003/0087138 to Margiott et al. (hereafter "Margiott").

Claim 7 depends upon independent claim 4, and adds separate and patentable limitations to claim 4.

Applicants respectfully submit that the Woods, Joshi and Margiott references, alone or in any combination, fail to teach or suggest at least the following features of amended independent claim 4: "said reforming mechanism including an evaporator for changing water into steam before said steam mixes with said hydrogen-containing fuel or an oxygen supply."

As set forth above in connection with claims 1 and 4, the Woods and Joshi references, alone or in any combination, do not teach or suggest the above features. The addition of the Margiott reference fails to cure this deficiency.

The Margiott reference relates to a shut-down procedure for a fuel cell (Margiott, abstract). The fuel cell system includes fuel processing components, such as a reformer and shift converter, for converting an organic fuel to hydrogen (Margiott, abstract). The system is shut-down by disconnecting the fuel cell from its load and purging the fuel processing components of residual hydrogen with a flow of air (Margiott, abstract). Applicants respectfully submit that the Margiott reference also does not teach or suggest "said reforming mechanism including an

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evaporator for changing water into steam before said steam mixes with said hydrogen-containing fuel or an oxygen supply," as recited in claim 4.

In view of the foregoing arguments, Applicants respectfully submit that the Woods, Joshi and Margiott references, alone or in any combination, fail to teach or suggest each and every feature of independent claim 4. Furthermore, the Woods, Joshi and Margiott references do not provide any motivation that would have led one of ordinary skill in the art to modify their teachings to arrive at Applicants' invention.

Claim 7 depends upon independent claim 4, and adds separate and patentable limitations to claim 4. As such, for this and the reasons set forth above, Applicants respectfully submit that dependent claim 7 defines over the art of record. Accordingly, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of claim 7.

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CONCLUSION

In view of the foregoing amendments and arguments, Applicants believe the pending application is in condition for allowance.

Applicants believe that no fee is due with this statement. However, if a fee is due, please charge our Deposit Account No. 12-0080, under Order No. TOW-067RCE from which the undersigned is authorized to draw.

Dated: July 17, 2008

Respectfully submitted,

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